

CLAIMS

- 1. A method for performing a handover procedure for  
a mobile station (MS) communicating in a communication  
5 network and being movable therein,  
said communication network comprising  
a plurality of base transceiver stations being adapted  
to perform a communication with said mobile station (MS)  
within its coverage area,  
said method comprising the steps of  
processing (S3) location information related to the  
mobile station (MS) and position information related to the  
base transceiver stations (BTS 1A, BTS 1B, BTS 2, BTS 3),  
deciding (S4) on the basis of the result of said  
processing (S3), whether a first handover condition is  
fulfilled,  
designating (S9) a next base transceiver station in  
said communication network, to which the communication with  
said mobile station (MS) is to be directed from a current  
base transceiver station, when the first handover condition  
is fulfilled,  
triggering a handover (S10) of the communication  
connection of the mobile station (MS) from the current base  
transceiver station to the next base transceiver station  
designated in said designating step (S9), and  
25 performing (S11) the handover.
- 2. A method according to claim 1, wherein  
in said processing step (S3) at least one additional  
30 parameter is processed together with said location  
information related to the mobile station (MS) and position  
information related to the base transceiver stations (BTS  
1A, BTS 1B, BTS 2, BTS 3).
- 35 — 3. A method according to claim 2, wherein

said additional parameter is based on a signal quality.

- 5 - 4. A method according to claim 1, further comprising a location information obtaining step (S2) comprising a step of determining said location information related to the mobile station (MS) and a step of transmitting said determined location information to a respective network device (BSC, MSC) adapted to perform said processing step (S3).
- 10 - 5. A method according to claim 4, wherein said step of determining said location information related to the mobile station (MS) is executed in the mobile station (MS).
- 15 - 6. A method according to claim 4, wherein said step of determining said location information related to the mobile station (MS) is executed in a network element on the network infrastructure side.
- 20 - 7. A method according to claim 4, wherein said step of determining said location information related to the mobile station (MS) is based on at least one of the following methods:
- 25           locating by a global positioning system;  
          locating by a time of arrival;  
          locating by an observed time difference.
- 30 - 8. A method according to claim 4, wherein said location information obtaining step (S2) is executed periodically.
- 35 - 9. A method according to claim 4, wherein said location obtaining step (S2) is executed upon predetermined occasions.

- 10     - 10. A method according to claim 9, wherein said predetermined occasion is a attachment procedure of the mobile station (MS) to the communication network.
- 15     5     - 11. A method according to claim 1, wherein, if the first handover condition is not fulfilled, the method further comprises the steps of checking (S5), whether a further measurement is to be performed,
- 20         selecting (S6) a type of further measurement, if a measurement is to be performed,
- 25         executing (S7) the measurement selected in said selecting step (S6),
- 30         verifying (S8), whether a measurement result represents a second handover condition, and
- 35         if the result of said verifying step (S8) represents the second handover condition, initiating execution of said target cell designation step (S9) for performing the handover (S10, S11).
- 40     - 12. A method according to claim 1, wherein said first handover condition is subscriber specific.
- 45     25     - 13. A method according to claim 1, wherein the coverage area of the base transceiver station designated in said designating step (S9) and to which the communication connection is to be directed (S10) is a coverage area adjacent to the coverage area of the current base transceiver station.
- 50     30     - 14. A method according to claim 1, wherein the coverage area of the base transceiver station designated in said designating step (S9) and to which the communication connection is to be directed (S10) is a coverage area not adjacent to the coverage area of the current base transceiver station.

5        15. A method according to claim 14, wherein the coverage area not adjacent to the coverage area of the current base transceiver station to which the communication connection is to be directed (S10) is known to the communication network.

10        16. A method according to claim 15, wherein the base transceiver station (BTS) with the coverage area not adjacent to the coverage area of the current base transceiver station, to which the communication connection is to be directed (S10), is a predetermined base transceiver station (BTS).

15        17. A method according to claim 16, wherein the position information of the predetermined base transceiver station (BTS) is stored in a subscriber identity module (SIM) or in the mobile station (MS).

20        18. A device for controlling a handover procedure for a mobile station (MS) communicating in a communication network and being movable therein,  
            said communication network comprising  
            a plurality of base transceiver stations being adapted  
            to perform a communication with said mobile station (MS)  
            within its coverage area,  
            said device comprising  
            a processing means (2) for processing location information related to said mobile station (MS) and position information related to base transceiver stations (BTS), and for deciding on the basis of the result of said processing, whether a first handover condition is fulfilled,  
            a designating means (4) for designating a next base transceiver station in said communication network, to which the communication with said mobile station (MS) is to be

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switched from a current base transceiver station, when the first handover condition is fulfilled, and

a triggering means (5) for triggering a handover of the communication connection of the mobile station (MS) from the current base transceiver station to the next base transceiver station designated by said designating means (4).

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- 19. A device according to claim 18, wherein in said processing means (2) at least one additional parameter is processed together with said location information related to the mobile station (MS) and position information related to the base transceiver stations (BTS 1A, BTS 1B, BTS 2, BTS 3).
  - 20. A method according to claim 19, wherein said additional parameter is based on a signal quality.
  - 21. A device according to claim 18, further comprising means (1)
    - for determining location information related to the mobile station (MS) and
    - for transmitting said determined location information to a respective network device (BSC, MSC) performing said processing.
  - 22. A device according to claim 21, further comprising a memory means (3) for memorizing location information related to the mobile station (MS) and position information related to the base transceiver stations (BTS),
  - 23. A device according to claim 21, wherein said means (1) for determining location information related to the mobile station (MS) and for transmitting said determined location information to a respective network device (BSC, MSC)

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performing said processing are located in the mobile station (MS).

5 24. A device according to claim 21, wherein said means (1) for determining location information related to the mobile station (MS) and for transmitting said determined location information to a respective network device (BSC, MSC) performing said processing are located in a network element on the network infrastructure side.

10 25. A device according to claim 21, wherein said means (1) for determining the location information related to the mobile station (MS) is adapted to perform said determination according to at least one of the following methods:

locating by a global positioning system;  
locating by a time of arrival;  
locating by an observed time difference.

15 26. A device according to claim 18, further comprising a measurement means (6) adapted to check, whether a further measurement is to be performed,

20 select a type of further measurement, if a measurement is to be performed,

execute the selected measurement,

verify, whether a measurement result represents a second handover condition, and

if said second handover condition is verified,

25 forwarding the measurement result to said handover condition processing means (2) for performing the handover.

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